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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,120	04/23/2002	Jakob Nielsen	66722-012-7	3828

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EXAMINER	
KURR, JASON RICHARD	

ART UNIT	PAPER NUMBER
2615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/031,120	NIELSEN ET AL.	
	Examiner	Art Unit	
	Jason R. Kurr	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 16, 2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2 and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kates et al (US 6,434,247 B1) in view of Gao et al (US 6,876,751 B1).

With respect to claim 1, Kates discloses a method for canceling feedback in an acoustic system comprising a microphone (fig.9 #104), a signal path (fig.9 #124), a speaker (fig.9 #120), means for detecting presence of feedback between the speaker

and the microphone (fig.9 #112), and first adaptive feedback cancellation filter means (fig.9 #132) for compensating at least partly a possible feedback signal (col.6 ln.19-42), the method comprising: using a LMS algorithm (fig.9 #130,936) for generating filter coefficients for the first adaptive feedback cancellation filter means and for generating filter coefficients for a second adaptive feedback cancellation filter means (fig.9 #934)(col.6 ln.66-67, col.7 ln.1-3); using a filter to prevent undesired signals from entering the LMS algorithm (fig.9 #128); using the second adaptive feedback cancellation filter and a noise generator (fig.9 #954) for providing low-frequency input for the LMS algorithm (col.11 ln.4-21).

Kates does not disclose expressly wherein the filter to prevent undesired signals is a highpass filter to prevent low-frequency signals from entering the LMS algorithm.

Gao discloses a method of adaptively canceling acoustic feedback wherein a highpass filter (fig.6 "BPF1") prevents low frequency signals from entering an LMS algorithm (col.5 ln.36-58)(col.7 ln.12-17).

At the time of the invention it would have been obvious to use the high pass filter of Gao in the invention of Kates.

The motivation for doing so would have been to pass signals in the frequency region containing all the unstable feedback frequencies. This would minimize distortion from the adaptive filter as taught by Gao (col.1 ln.52-59).

Gao does not disclose expressly wherein the filter (fig.6 "BPF1") is strictly a highpass filter, however it is known to those of ordinary skill in the art, that a bandpass filter is made up of a cascaded highpass filter with a lowpass filter. In the present case

the bandpass filter of Gao achieves the same result as a high pass filter, by not allowing the transmission of low frequency signals to the LMS algorithm.

With respect to claim 2, Kates discloses a method according to claim 1, however does not disclose expressly where a Schroeder noise generator is used for generating a broad band noise signal having an amplitude substantially equal to the amplitude of the signal from which it was derived.

Official Notice is taken that the concept and advantages of using a Schroeder noise generator to provide a noise signal are well known in the art. It would have been obvious to use a Schroeder noise generator as the noise generator of Kates. The motivation for doing so would have been to provide the system with a stable noise signal that is highly predictable.

With respect to claim 4, Kates discloses a method according to claim 1 in view of, where the LMS algorithm operates with a predetermined essentially level independent adaptation speed when feedback is not present, this representing a first mode, where the LMS algorithm operates at a level dependant adaptation speed when feedback is present, this representing a second mode (col.7 ln.42-60); where the means for detecting the presence of feedback is used to control the adaptation mode selection of the LMS algorithm (col.7 48-60); and where the adaptation speed for the LMS algorithm is determined by a long-term average of a denominator in the LMS update algorithm in the second mode (col.11 ln.13-19).

With respect to claim 5, Kates discloses a method according to claim 4, whereby bandwidth detection means (fig.9 #112) are used for determining the presence of a feedback signal.

With respect to claim 6, Kates discloses a method according to claim 5, where the stability of the signal determined as the feedback signal is analyzed (col.2 ln.39-67, col.3 ln.1-3).

With respect to claim 7, Kates discloses a method according to claim 6 in view of Hansen, where the feedback analyzing comprises holding flag values from a number of succeeding time frames and comparing of these (col.8 ln.46-58).

With respect to claim 8, Kates discloses a hearing aid comprising: a microphone (fig.9 #104); a signal path (fig.9 #124); an amplifier (fig.9 #118); a speaker (fig.9 #120); means for detecting feedback between the speaker and the microphone (fig.9 #112); first adaptive feedback cancellation filter means (fig.9 #132) for at least partly compensating a possible feedback signal; memory means (fig.9 #130,936) including a LMS algorithm for generating filter coefficients for the first adaptive feedback cancellation filter means and for generating filter coefficients for a second adaptive feedback cancellation filter means (fig.9 #934)(col.6 ln.66-67, col.7 ln.1-3); at least one filter to prevent undesired signals from entering the LMS algorithm (fig.9 #128); whereby

the second adaptive feedback cancellation filter means and a noise generator (fig.9 #954) for providing low-frequency input for the LMS algorithm (col.11 ln.4-21).

Kates does not disclose expressly wherein the filter to prevent undesired signals is a highpass filter to prevent low-frequency signals from entering the LMS algorithm.

Gao discloses a method of adaptively canceling acoustic feedback wherein a highpass filter (fig.6 "BPF1") prevents low frequency signals from entering an LMS algorithm (col.5 ln.36-58)(col.7 ln.12-17).

At the time of the invention it would have been obvious to use the high pass filter of Gao in the invention of Kates.

The motivation for doing so would have been to pass signals in the frequency region containing all the unstable feedback frequencies. This would minimize distortion from the adaptive filter as taught by Gao (col.1 ln.52-59).

Gao does not disclose expressly wherein the filter (fig.6 "BPF1") is strictly a highpass filter, however it is known to those of ordinary skill in the art, that a bandpass filter is made up of a cascaded highpass filter with a lowpass filter. In the present case the bandpass filter of Gao achieves the same result as a high pass filter, by not allowing the transmission of low frequency signals to the LMS algorithm.

Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kates et al (US 6,434,247 B1) in view of Gao et al (US 6,876,751 B1) and in further view of Engebretson (US 5,475,759).

With respect to claims 3 and 9, Kates discloses a method and system according to claims 2 and 8 respectively, however does not disclose expressly wherein a steep low pass filter is used to generate a low frequency noise signal to be used as an additional input to the LMS algorithm.

Engebretson discloses an adaptive feedback cancellation system wherein a steep low pass filter (fig.3 #59) generates a low-frequency noise signal to be used as an additional input to an LMS algorithm (col.7 ln.19-25).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the low pass filter of Engebretson in the input signal path to the LMS algorithms of Kates.

The motivation for doing so would have been to prevent aliasing of the input signals.

Response to Arguments

Applicant's arguments with respect to claims 1 and 8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason R. Kurr whose telephone number is (571) 272-0552. The examiner can normally be reached on M-F 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 273-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JK
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